Remarks

The Applicants have amended Claim 1 by incorporating the subject matter of Claims 2 and 18. Claims 2 and 18 have accordingly been cancelled.

Claim 1 has further been amended to remove references to "low rigidity." Various of the dependent claims containing similar language have also been amended. Claim 1 has still further been amended to recite that the crushable structure absorbs impacts to a pedestrian at the time of collision or more specifically to a pedestrian during a collision. Support may be found in paragraph [0005] in the Applicants' specification. Claim 1 has still further been amended to recite that the high breaking elongation layer does not contain reinforcing fibers. Support for that language may be found in the Applicants' specification in paragraph [0055], for example.

The Applicants have cancelled Claims 7-14. However, selected ones of those claims are reintroduced as new dependent claims as discussed below.

New Claim 24 is fundamentally based on Claim 1 prior to the current amendments. It also contains the subject matter of Claims 2 and 15 as well as the aspect that the continuous part is a trigger point for breakage. Support may be found in paragraph [0051] of the Applicants' specification.

New Claims 25-32 correspond to Claims 3, 4, 5, 6, 20, 21, 22 and 23, respectively, but depend directly or indirectly on new Claim 24.

Entry of the above changes to the claims into the official file is respectfully requested.

Claims 1-6, 8-10, 13 and 18-23 stand rejected under 35 USC §103 over the combination of JP '856 with JP '846. The Applicants respectfully submit that the rejection is now moot with respect to cancelled Claims 2, 8-13 and 18. The Applicants further respectfully submit that even if one skilled in the art were to make the hypothetical combination, the product resulting from

that combination would still be different from the subject matter of Claims 1, 3-6 and 19-23. Reasons are set forth below.

As noted above, the Applicants have amended Claim 1 to recite that the differences in strength are provided by providing a high breaking elongation layer not containing reinforcing fibers into any one of the first and second FRP layers. Also, Claim 19 recites that the high breaking elongation layer comprises a high breaking elongation resin, and the resin comprises a thermoplastic resin having a low affinity in adhesion with a matrix resin of the FRP layer. The Applicants respectfully submit that both of JP '846 and '856 fail to disclose, teach or suggest that claimed aspect, as a result, the resulting combination would produce a different type of FRP panel.

JP '846 discloses an FRP panel for automobiles wherein a core material is provided between a pair of FRP skin layers 3, 4 and, at end portions, the FRP skin layers are bonded directly to each other. However, there is no disclosure with respect to the concrete structure (direction or crossing angle of reinforcing fibers, layering number, etc.) of respective FRP skin layers 3, 4. Further, there is no disclosure, teaching or suggestion as to a structure wherein a high breaking elongation layer comprising a thermoplastic resin is inserted between layers of respective FRP skin layers as recited in the Applicants' Claim 1.

JP '856 discloses aramide fiber reinforced plastic material (breakage preventing layer 3c). However, although paragraph [0032] of JP '856 discloses that "aramide fibers very hard to be broken are disposed," it is inevitable that a fiber reinforced plastic layer impregnated with a matrix resin similar to other layers, and also as described in paragraph [0032] of JP '856, that "since a portion other than the cutting line of this fiber reinforced plastic member is layered with a plurality of layers of fiber reinforced plastic material, in a usual condition (in a condition not

applied with a great external force), a sufficient mechanical strength can be held," it becomes apparent that it is necessary that the breakage preventing layer 3c itself has a mechanical strength.

In sharp contrast, the Applicants' high breaking elongation layer not containing reinforcing fibers as recited in Claim 1 and comprising a thermoplastic resin having a low affinity in adhesion with a matrix resin of the FRP layer in Claim 19 is provided. This high breaking elongation layer either can be molded integrally with the FRP plate or can be formed separately and bonded to the back surface side of the FRP plate as disclosed in paragraph [0052] of the Applicants' specification and, therefore, it is not one layer among FRP layers as in JP '856.

Further, when the panel has been deformed, an advantage can be obtained that, in addition that impact energy can be adequately absorbed by the high elongation property of the high breaking elongation layer, by a slipping between the high breaking elongation layer and the FRP layer caused in friction fixing portion, a part of the impact energy is transformed into thermal energy, and the impact energy is better absorbed as disclosed in paragraph [0058] of the Applicants' specification. Such slip with the FRP layer does not occur in the FRP plate structure of JP '856 formed similarly to the other fiber reinforced plastic layers.

Therefore, although similar with respect to preventing breakage, the Applicants' Claim 1 has a high breaking elongation layer which is not disclosed, taught or suggested in JP '856. Hence, the advantage of absorption of impact energy due to transformation into thermal energy is not exhibited by JP '856.

Thus, the Applicants provide a crushable structure that absorbs impacts to a pedestrian at the time of a collision. There is no disclosure and no suggestion of a collision with a pedestrian

in JP '846. It merely discloses a panel structure. Further, JP '856 discloses that "hood 1 is thus attached on the front side of the vehicle, ... is a member which comes into contact with a collision substance when the vehicle collides at the front side" (paragraph [0021]), and it is different from the behavior in which the head of a pedestrian collides with a panel schematically perpendicular thereto as shown in Fig. 1 or Fig. 33 of the Applicants' drawings.

Inasmuch as the Applicants have demonstrated that both of JP '846 and JP '856 fail to disclose, teach or suggest the Applicants' claimed high breaking elongation layer in either the first or second FRP layers as recited in Claim 1, wherein the high breaking elongation layer comprises a high breaking elongation resin which comprises a thermoplastic resin having a low affinity adhesion with a matrix resin of the FRP layer as recited in Claim 19, hypothetically combining the two as recited in the rejection would result in a different type of FRP panel.

However, there is more. JP '856 discloses providing of aramide fiber reinforced plastic material (breakage preventing layer 3c). However, as to breakage preventing layer 3c, although in it "aramide fibers very hard to be broken are disposed" (paragraph [0032]), it is inevitably a fiber reinforced plastic layer impregnated with a matrix resin similarly to other layers, and as described in paragraph [0032] that "since a portion other than the cutting line of this fiber reinforced plastic member is layered with a plurality of layers of fiber reinforced plastic material, in a usual condition (in a condition not applied with a great external force), a sufficient mechanical strength can be held," it is considered that it is necessary that the breakage preventing layer 3c itself has a mechanical strength.

On the other hand, in Claim 1, a high breaking elongation layer not containing reinforcing fibers is provided. For this high breaking elongation layer, for example, a structure in which it is formed from a flexible resin or a thermoplastic resin is exemplified (paragraph

[0051]), and it either can be molded integrally with FRP plate or can be formed separately and bonded to the back surface side of the FRP plate (paragraph [0052]). Therefore, it is not one layer among FRP layers as in JP '856.

Further, when the panel has been deformed, an advantage can be obtained that, in addition that an impact energy can be adequately absorbed by the high elongation property of the high breaking elongation layer by slippage between the high breaking elongation layer and the FRP layer caused in friction fixing portion, a part of the impact energy is transformed into thermal energy, and the impact energy can be better absorbed (paragraph [0058]). Such slippage with the FRP layer does not occur in the FRP plate structure of JP '856 formed similarly to the other fiber reinforced plastic layers.

Therefore, although similar merely with respect to the point of preventing breakage, Claim 1 has a high breaking elongation layer which is neither described nor suggested in JP '856, and the advantage of absorption of impact energy due to transformation into thermal energy is exhibited by JP '856. Thus, the combination of JP '846 and JP '856 is inapplicable to Claims 1, 3-6 and 20-23. Withdrawal of the rejection is respectfully requested.

Claims 11-17 stand rejected under 35 USC §103 over the further combination of Fujimoto with JP '846 and JP '856. The Applicants respectfully submit, however, that the rejection is moot with respect to cancelled Claims 11-14 and, in any event, Fujimoto fails to cure the deficiencies set forth above with respect to JP '846 and JP '856. Withdrawal of that rejection is also respectfully requested.

New Claims 24-32 are also allowable over the art of record. In JP '856, since "hood 1 is thus attached on the front side of the vehicle, ... is a member which comes into contact with a collision substance when the vehicle collides at the front side" (paragraph [0021]) and when

there is a collision at the front side, "the FRP hood has a feature that it is hard to be deformed as compared with a metal hood because the FRP has an excellent spring property and is a material not to be plastically deformed" (paragraph [0004]), there is a fear that the FRP hood may enter into the interior of the vehicle at the time of collision. For the purpose of preventing such an entering and thereby protecting the vehicle occupants, a structure is provided, "which is deformed at a desired position without being broken at the time of collision" (paragraph [0008]).

Hence, a discontinuous portion is provided to form a "bending bead" almost equal to that in a metal hood, and when an impact is applied from the front surface of the vehicle body (Fig. 2 when an impact is applied from the left side toward the right direction along the surface of the FRP hood), a deformation due to compression force (for example, a buckling deformation) is generated.

Claim 24 provides an FRP structural body suitable as an FRP outer panel member for an automobile capable of suppressing an impact to a pedestrian at the time of collision by adequately absorbing the impact and exhibits the advantage that "an impact can be absorbed by easy breakage of the discontinuous portion" as disclosed in the Applicants' specification in paragraph [0051]. Thus, the technical concept is quite different from that of JP '856 in the point whether the discontinous portion is broken or not.

Therefore, even if apparently a similar structure can be considered wherein a "discontinuous portion" is provided in an FRP panel, JP '856 discloses merely that "a fragile portion is introduced into skin 1a and at the time of collision, it is structured that the skin can be deformed by operating this cut line as a trigger point" (paragraph [0025]). Although it is recognized that the discontinuous portion is used as the trigger point of the deformation, there is no disclosure, teaching or suggestion as to a desirable section or position for providing the

discontinuous portion. Further, there is no disclosure, teaching or suggestion as to how the FRP hood is deformed by the collision.

Thus, Claim 24 is directed to a technical concept different from JP '856 and JP '846 and neither reference is applicable, alone or in combination.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

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